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L1	28	(methanotrophic near2 bacteria) and feed	USPAT	OR	OFF	2005/03/31 15:09
L2	4	(methanotrophic near2 bacteria) and (animal near2 feed)	USPAT	OR	OFF	2005/03/31 15:09
L3	68	(methanotrophic near2 bacteria)	USPAT	OR	OFF	2005/03/31 15:10
L4	1	I3 and ((produce or produced or make or production or making or manufacture or generate or manufacturing or manufactured or generating or generated) near2 feed)	USPAT	OR	OFF	2005/03/31 15:13

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=> s (methanotrophic (2A) bacteria)

37 FILES SEARCHED...

75 FILES SEARCHED...

L1 4932 (METHANOTROPHIC (2A) BACTERIA)

=> s l1 and ((produce or produced or make or production or making or manufacture or generate or manufacturing or manufactured or generating or generated) (2A) feed)

2 FILES SEARCHED...

6 FILES SEARCHED...

16 FILES SEARCHED...

26 FILES SEARCHED...

33 FILES SEARCHED...

34 FILES SEARCHED...

40 FILES SEARCHED...

45 FILES SEARCHED...

62 FILES SEARCHED...

81 FILES SEARCHED...

94 FILES SEARCHED...

L2 6 L1 AND ((PRODUCE OR PRODUCED OR MAKE OR PRODUCTION OR MAKING
OR MANUFACTURE OR GENERATE OR MANUFACTURING OR MANUFACTURED OR
GENERATING OR GENERATED) (2A) FEED)

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L3 5 DUPLICATE REMOVE L2 (1 DUPLICATE REMOVED)

=> d 13 1-5 bib ab

L3 ANSWER 1 OF 5 USPATFULL on STN

AN 2004:334353 USPATFULL

TI Use of a single-cell protein as feed for fish and shellfish

IN Kleppe, Gunnar, Hafrsfjord, NORWAY

PI US 2004265431 A1 20041230

AI US 2004-486693 A1 20040708 (10)
WO 2002-GB3795 20020816

PRAI GB 2001-20047 20010816

DT Utility

FS APPLICATION

LREP SUGHRUE MION, PLLC, 2100 PENNSYLVANIA AVENUE, N.W., SUITE 800,
WASHINGTON, DC, 20037

CLMN Number of Claims: 16

ECL Exemplary Claim: CLM-001-8

DRWN No Drawings

LN.CNT 254

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention relates to a feed material for fish and shellfish, for example a feed material for molluscs such as mussels. In particular, the invention relates to the use of single-cell protein materials and their derivatives (especially homogenized and/or autolysed derivatives) as a feed for fish and shellfish. A preferred single-cell material for use in the invention is that derived from a microbial culture comprising Methylococcus capsulatus (Bath) (strain NCIMB 11132), Ralstonia sp. DB3 (strain NCIMB 13287) and Brevibacillus agri DB5 (strain NCIMB 13289),

optionally in combination with Aneurinibacillus sp. DB4 (strain NCIMB 13288).

L3 ANSWER 2 OF 5 USPATFULL on STN
AN 2004:190241 USPATFULL
TI High growth methanotrophic bacterial strain
IN Koffas, Mattheos, Wilmington, DE, UNITED STATES
Odom, James M., Kennett Square, PA, UNITED STATES
Schenzle, Andreas, Zuerich, SWITZERLAND
PI US 2004147011 A1 20040729
AI US 2003-701200 A1 20031104 (10)
RLI Division of Ser. No. US 2001-934868, filed on 22 Aug 2001, GRANTED, Pat.
No. US 6689601
PRAI US 2000-229858P 20000901 (60)
DT Utility
FS APPLICATION
LREP E I DU PONT DE NEMOURS AND COMPANY, LEGAL PATENT RECORDS CENTER, BARLEY
MILL PLAZA 25/1128, 4417 LANCASTER PIKE, WILMINGTON, DE, 19805
CLMN Number of Claims: 31
ECL Exemplary Claim: 1
DRWN 6 Drawing Page(s)
LN.CNT 5659

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A high growth methanotrophic bacterial strain capable of growth on a C1 carbon substrate has been isolated and characterized. The strain has the unique ability to utilize both methane and methanol as a sole carbon source and has been demonstrated to possess a functional Embden-Meyerhof carbon flux pathway. The possession of this pathway conveys an energetic advantage to the strain, making it particularly suitable as a production platform for the production of biomass from a C1 carbon source.

L3 ANSWER 3 OF 5 USPATFULL on STN DUPLICATE 1
AN 2002:251243 USPATFULL
TI High growth methanotrophic bacterial strain
IN Koffas, Mattheos, Wilmington, DE, UNITED STATES
Odom, James M., Kennett Square, PA, UNITED STATES
Schenzle, Andreas, Zuerich, SWITZERLAND
PI US 2002137190 A1 20020926
US 6689601 B2 20040210
AI US 2001-934868 A1 20010822 (9)
PRAI US 2000-229858P 20000901 (60)
DT Utility
FS APPLICATION
LREP E I DU PONT DE NEMOURS AND COMPANY, LEGAL PATENT RECORDS CENTER, BARLEY
MILL PLAZA 25/1128, 4417 LANCASTER PIKE, WILMINGTON, DE, 19805
CLMN Number of Claims: 31
ECL Exemplary Claim: 1
DRWN 6 Drawing Page(s)
LN.CNT 5562

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A high growth methanotrophic bacterial strain capable of growth on a C1 carbon substrate has been isolated and characterized. The strain has the unique ability to utilize both methane and methanol as a sole carbon source and has been demonstrated to possess a functional Embden-Meyerhof carbon flux pathway. The possession of this pathway conveys an energetic advantage to the strain, making it particularly suitable as a production platform for the production of biomass from a C1 carbon source.

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STN
AN 92:20524 BIOBUSINESS
DN 0431604
TI Origin of phage particles in culture fluids during the industrial
production of fodder protein with the use of methanotrophic

bacteria: The role of the bacteria in the discontinuing the
 fermentation process.
 AU LOBANOV A O; TURIN V S; KRYLOV V N
 CS ALL-UNION RES. INST. GENET. SEL. IND. MICROORG., MOSCOW 113545, RUSSIA.
 SO BIOTEKHNOLOGIYA, (1992) NO.1, P.4-8.
 FS NONUNIQUE
 LA RUSSIAN
 AB There is a direct confirmation of the possibility that the phage lysis of
 the attending cultures may cause the death of the main culture in the
 article. Besides reviewed are the properties as follows: data received
 during electronic-microscope observations of bacteria during continuous
 fermentation proving the existing phages, specific for bacteria, which are
 in the special physiological state caused probable by the continuous
 character of fermentation.

L3 ANSWER 5 OF 5 FEDRIP COPYRIGHT 2005 NTIS on STN
 AN 2005:43215 FEDRIP
 NR ENRGY 77721
 NC DOE/SBIR, FG05-93ER81483
 TI Biological Removal of Coal Mine Methane
 SF Principal Investigator: Clausen, E.C.; P.O. Box 3682, Hwy. 112,
 Fayetteville, AR, 72702
 CSP Engineering Resources, Inc., Biomass Research Center
 CSS Supported By: USDOE Energy Research.
 DB Sep 8, 1993
 DE Apr 1, 1994
 FS Department of Energy
 SUM Atmospheric concentrations of methane are currently increasing at a rate
 of one percent annually. Emissions of this greenhouse gas from coal mines
 now amount to about 65 million tons annually, and are increasing steadily.
 Methane adsorbed onto internal coal surfaces is released as the coal is
 mined. This gas is vented to the atmosphere from gob wells or with
 ventilation air. The methane concentrations are dilute, and recovery is
 rarely economical. This project involves a novel concept to convert waste
 methane into a high value product, single cell protein (SCP) for animal
 feed. **Methanotrophic bacteria** convert methane into
 cell mass with a high protein content that has been shown to be a suitable
 supplement for protein in animal and poultry diets. The fermentation is
 aerobic, requiring at least an equal volume of oxygen with methane;
 consequently, dilute methane concentrations are required. Phase I will
 screen the various methanotrophs to select those that have the fastest
 growth rates and highest yields of SCP. Continuous culture studies will be
 conducted with the best bacteria to define reaction kinetics and minimal
 reactor volume. The design and economics of a process to produce SCP from
 coal mine methane will be projected to determine feasibility. Phase II
 will define engineering and marketing parameters for large scale
 production of SCP. A prototype unit will be constructed and operated in
 phase III to demonstrate scale-up. Anticipated Results/Potential
 Commercial Applications as described by the awardee: There are 180
 underground coal mines that discharge large quantities of methane into the
 atmosphere. The average discharge from the ten largest methane emitting
 mines is 11 million cubic feet per day. Conversion of the gas from one of
 these mines into SCP would generate \$30 million annually, requiring
 nominal capital and operating cost. Therefore, significant economic and
 environmental incentives exist for commercialization of the technology.

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